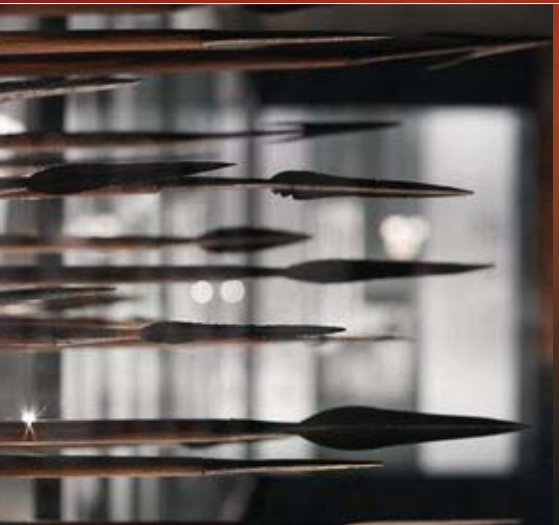
Roblon

Museum showcase lighting



The right light for showcases 5

Spotlight on light
- Salt Lake 2002 Olympic Museum 10
- Cleveland Museum of Art 14
- Cauldron Park Visitors' Centre 18

Designing showcase lighting
- Designing lighting 19
- Roblon Lux Calculator 19
- Light generator placement 20
- Fibre harness integration 21

Solutions and services
- Products 22
- Featured projects 22
- Online services and support 24

An integrated Roblon fibre optic solution gives you absolute freedom to design any kind of lighting for any kind of display item in any kind of display case for any kind of exhibition. At the same time it gives you absolute control of every tiny detail and nuance in colour, shadow and light.

The Roblon light generators ensure precision colour temperature control, which means the lighting can be balanced perfectly in relation to the display. There is very high colour rendering for the full colour spectrum, with CRI values above 90 being typical.

Concealed lenses in Roblon fittings mean no glare from light points and no reflections on any case surfaces, even glass. The light can be controlled with millimetre-precision, which means light never strays.

Light fittings are inside the cabinet, not outside. This means there is no distracting glare on the outer glass surface or around the showcase. There is only precision control of light, shadows and focus inside the case and on each individual item on display.

Many fittings can be run off one single light source, creating multiple points of light which can be cast in many directions inside the case. This can be used to create an immense sparkling effect which brings out every facet of every individual item on display.

General wash and precision accent lighting can be perfectly balanced in the same case and even run off one single light generator. This means that the perfect ambience can be created for the overall display while individual light is cast precisely to enhance even the tiniest of details on individual exhibits in the same case.

'Fibre optic lighting can be built into the showcase. The harmony achieved between the exhibited object, the showcase and the light is hard to obtain with traditional lighting.'

Bent Eshøj
Museum Conservator
Academy of Fine Arts
Copenhagen, Denmark

'Heat is a major issue when the lighting system is going night and day. It was a major advantage that we could put the light generators outside the case. Now heat is not an issue at all.'

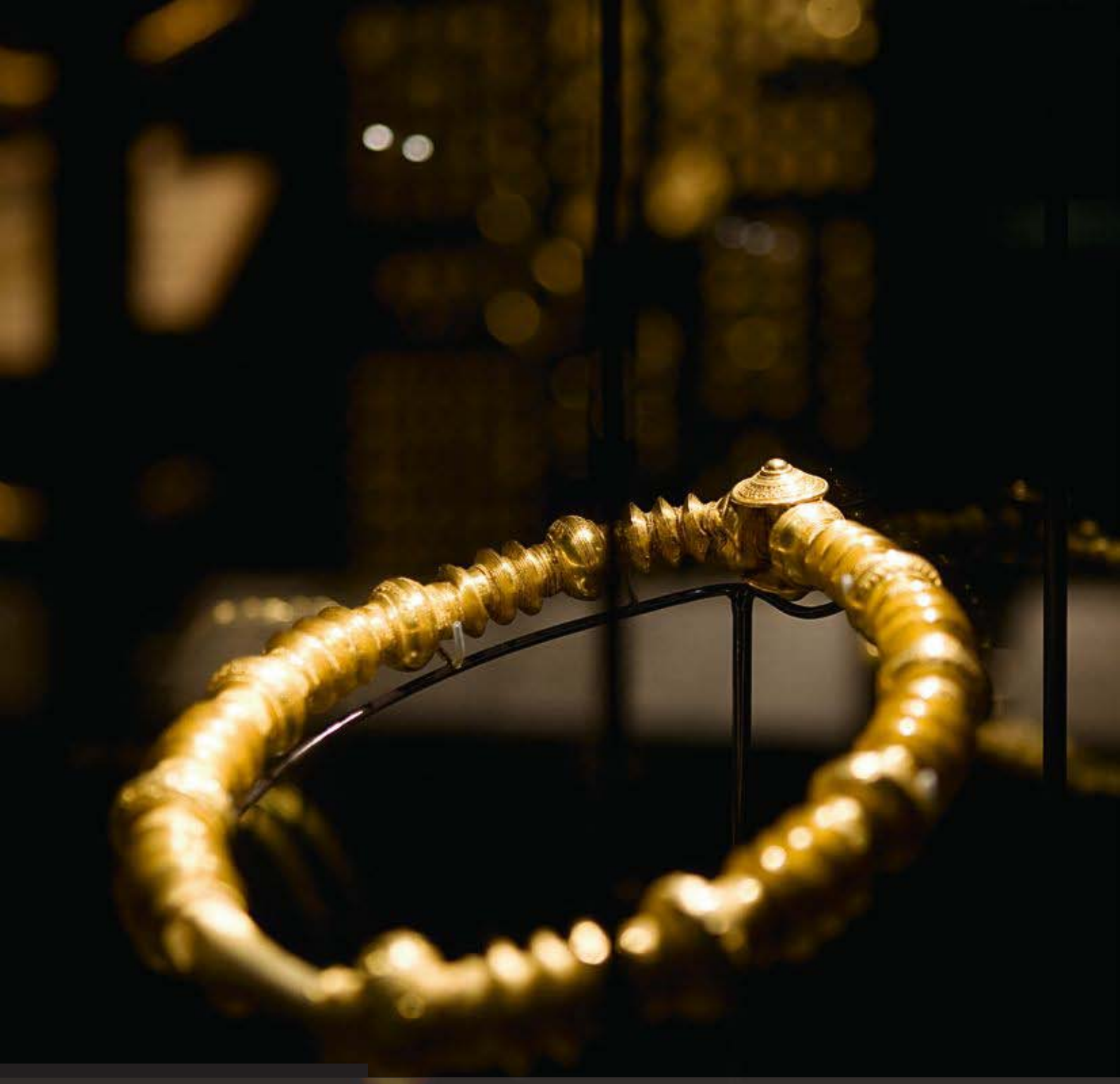
Jeffrey Strean
Director of Design and Architecture
Cleveland Museum of Art
Ohio, USA

Cold light means perfect conditions for in-case temperature and humidity control. No heat in the showcase means no heat to damage or to dry out precious, vulnerable or ancient artefacts. And no heat means no air circulation, which means no dust circulation. The cabinet interior stays clean and the display stays dust-free, which minimises the need to open the case for cleaning.

Total temperature and humidity control and air-tight light fittings mean perfectly safe lighting in pressurised display cases.

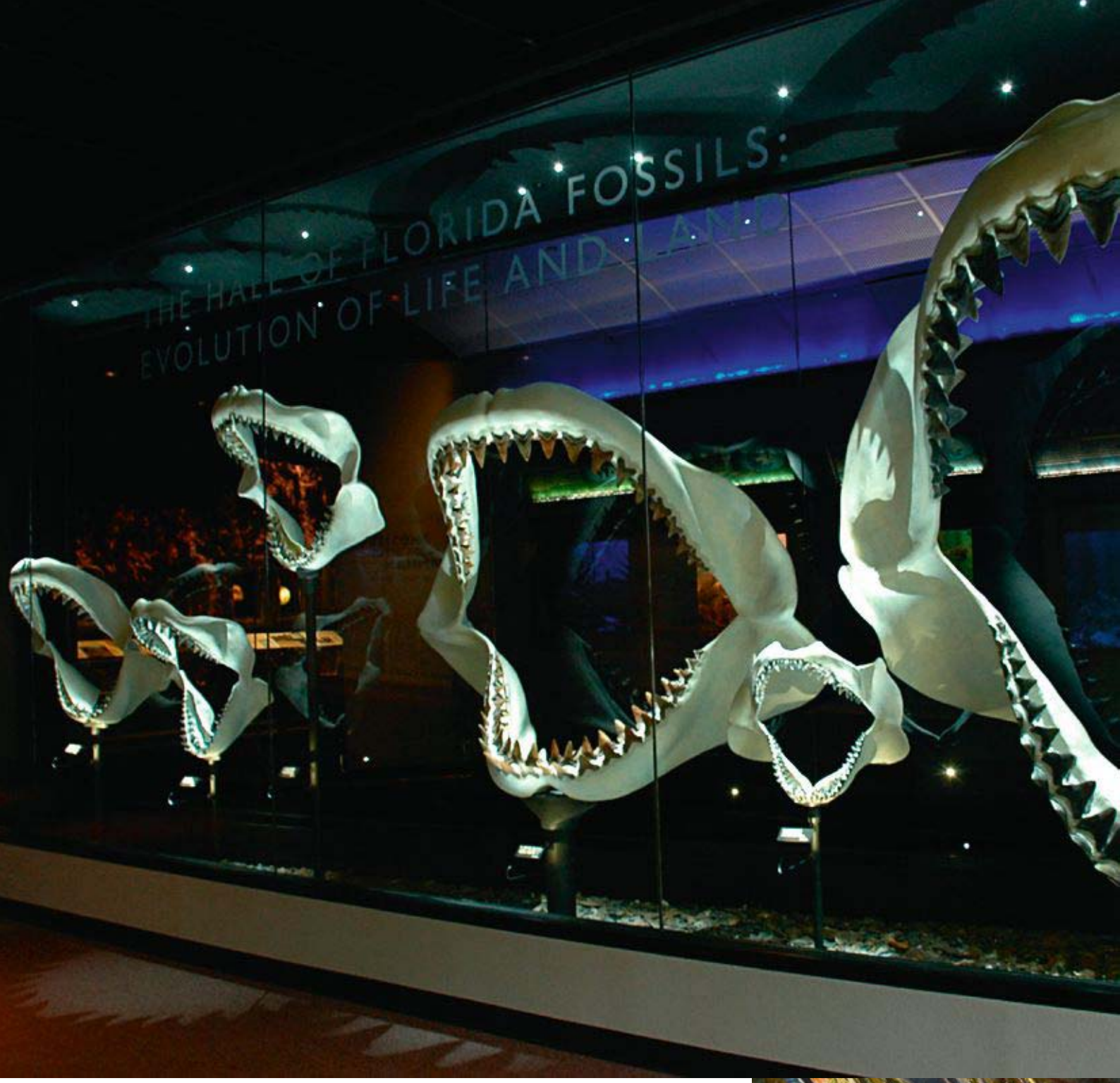
No infrared radiation and no ultraviolet rays are emitted. Absence of UV rays ensures that even the most precious and sensitive exhibits are protected. Absence of IR radiation removes the risk of heat exposure and reduces the need for noisy, energy-consuming air conditioning.

There is only one point of maintenance, and it is always outside the cabinet's display area. The light generator is completely hidden from view yet easily accessible. It has one single lamp, which means very little and very easy maintenance. No special expertise is needed, so any member of staff can easily change the lamp.



'The lights had to be really, really discreet. Ideally, we needed a lighting solution with light but no lamp.'

Mikael Svenungsson
Company owner
M2 Shopfitters
Rydöbruk, Sweden



Roblon's very discreet fittings range in size from small to simply tiny, which maximises space in the in-case display area. They blend elegantly in, even in all-glass cases. So the lighting technology goes unnoticed and the entire focus is on the exhibits.

The unusually flexible functionality built in to Roblon fittings means that light focus and beam angles can easily be adjusted, focused, directed, readjusted, refocused and redirected any time.

So any time the exhibits are changed, the lighting can easily be changed too.

Exceptional design emanates from every tiny detail in every fitting, which means that every fitting visually matches the high quality of the highest quality exhibition.

Customisable fittings and customisable solutions mean that any kind of light can be designed to suit any kind of object, any kind of showcase, any kind of exhibition and any kind of museum.

Iconic

'It's remarkable to see so many Olympic medals, one of every type, together. You'd never find this arrangement anywhere else in the world. It's iconic.'

David Grill
President
David Grill Associates
New York, USA

The little details don't make the difference at the Olympic Games. The absolutely tiny details do. One hundredth of a second can turn silver to gold, so perfectionist precision was also a requirement when the Salt Lake 2002 Olympic Museum was designed.

'The specification was very precise,' says Connie Nelson, Executive Director at the museum in Utah Olympic Park, USA. 'For example, all the display cases and all the photos are angled at 33° because that was the angle of the Olympic logo.'

The fundamental design requirement was 'excellence throughout'. 'There was a lot of pressure from donors, Board members and everyone involved in the Olympics,' says Ms. Nelson. 'The museum had to have the same feeling, effect and quality as the Olympic Games, no matter what.'

'We had a budget, of course, but the integrity of the Games needed to be integral. And we were adamant about the lighting. It had to be second to none.'

Olympic integrity was ensured when Libby Hyland, Creative Director of the Salt Lake Olympic Winter Games, was brought in to design the museum, and David Grill, who won a Primetime Emmy award for Best Lighting Direction for the 2002 opening ceremony, to design its lighting.

'David Grill has an engineer's precision, he's very professional and very exact,' says Connie Nelson. 'He's a perfectionist, which is essential for quality, and he personally fine-tuned every light.'

The New York-based designer used Roblon

XPO conduits and Roblon Ball & Socket fittings to illuminate exhibits including full-sized mannequins with Olympic and Paralympic sports gear, dramatic Native American opening ceremony costumes and a stunning showcase with original Olympic medals for every discipline.

The museum is open 11 hours a day, seven days a week, and welcomes 180,000 visitors a year. It was therefore also an absolute requirement that the lighting be both flexible and simple to maintain.

'The museum is vibrant and alive and interactive,' says its director. 'It's not about dusty artefacts on a wall. We have permanent exhibitions, we change exhibits regularly, and we have rotating exhibitions too.'

Roblon showcase lighting is fundamentally flexible, giving the freedom to change light intensity, beam angles and the overall lighting effect as displays change.

Fibres and light generators are hidden from view and outside the case, so maintenance never requires having to open a case or disturb a single exhibit.

'The museum design is very precisely and elegantly done, and the lighting really adds to it,' says Connie Nelson. 'And I can say categorically that the museum is so much easier to look after because the lighting maintenance is so easy.'

'The point is not to see the lighting technology, but to see the effect.'

David Grill
President
David Grill Associates
New York, USA

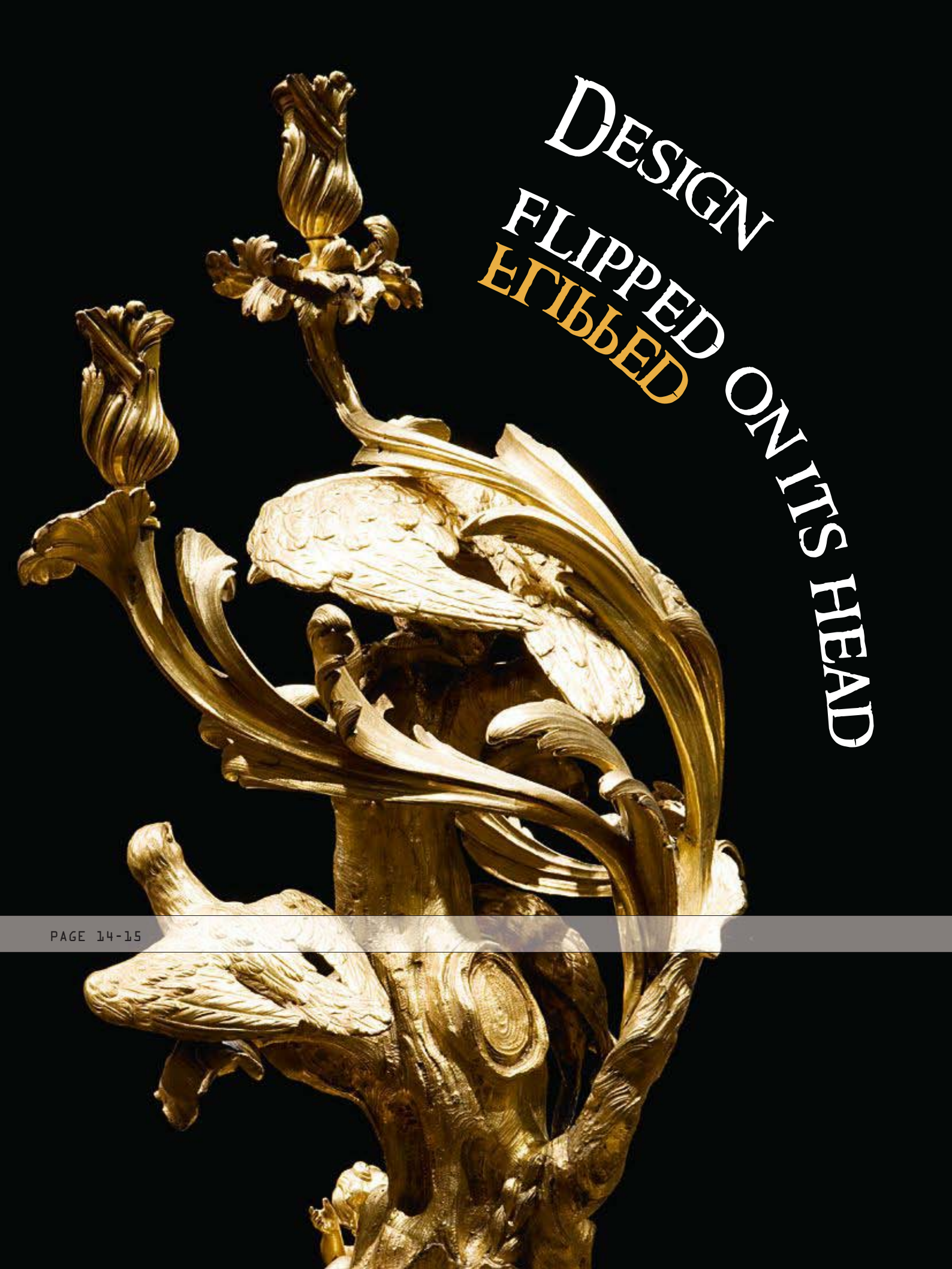
‘When people look at a display, they don’t notice the lights at all, they only notice the exhibits.‘

Connie Nelson
Executive Director
The Eccles Salt Lake 2002
Olympic Museum
Joe Quinney Winter Sports Center
Utah Olympic Park, USA

XP0

All products used:
pages 22-23

Design flipped on its head



Curators, not technology, must decide how exhibitions look. So when the internationally-renowned Cleveland Museum of Art began a massive redesign project, the design solutions had to be as flexible as the requirements were stringent.

'We're lovingly restoring the whole building, detail by detail, and we're strengthening the focus on the objects,' says Jeffrey Strean, Director of Design and Architecture at the CMA. 'These exhibits have been on view before, but until now all the detail wasn't shown.'

'When we selected the display case and lighting companies, it was important that they were willing to make it happen. They had to be flexible, to be willing to break their production process up in order to do something differently.'

Things were indeed done differently. For spectacular air-tight showcases in the European galleries, the CMA wanted wash and accent lighting together in the same case and same solution, running off one light generator and with a range from 50 to 300 lux.

'More often than not, you see display cases that are overly dramatic, that have too much light,' says Mr. Strean. 'We wanted to achieve something different, something that is just not possible through an off-the-shelf solution.'

'Any time you have to go into a case, you create a risk, so it was a requirement that we don't have to enter the case to adjust the light.' The standard Roblon Avant-garde accent light fitting is adjusted from its front. 'Roblon flipped its design around totally so now adjustment is done from the back, outside the case.'

To run accent and wash lighting off one generator, Roblon's R&D team designed a special harness system which dims the Roblon XPO wash lighting mechanically without

'You walk in to these galleries and everything just fits together perfectly. Everything has been thought through. In many museums, it's only the large, dramatic items that draw the eye. When you walk in here, you get absorbed in the details of the small exhibits and you want to read every information panel.'

Nils Aagaard
Area Sales Manager
Roblon
Frederikshavn, Denmark

altering the accent lighting.

The ability to adjust light with millimetre-precision was also a CMA requirement. 'Our lighting expert, Rusty Culp, fine-tuned the light for each artefact,' says Jeffrey Strean. 'He worked on each case for a week and it rendered really well.'

'There is light and shadow, but you don't see them, and you don't see where the light's coming from. That's another reason the fibre optic solution is so attractive. The actual fittings can be the size of the head of a nail. There are no visible fixtures. You'd have to really crane your neck and look very hard to even find a light fitting.'

'The lamp can be changed and the light adjusted without the case being opened. We hid the light generators in separate spaces on top. Because the space doesn't give access to the exhibits, there's no security risk. That meant we could use magnets instead of locks. Locks look ugly, and children can be good at putting chewing gum in keyholes, so it's better when you don't need them at all.'

Till Hahn
Managing Director
Glasbau Hahn, Frankfurt, Germany

'Before, we used at least 350 MR16 lights. Now there are just two or three light generators with one lamp each. So maybe two, three times a year you have to replace a single lamp, instead of having to maintain 350 lights. That is a huge saving in maintenance.'

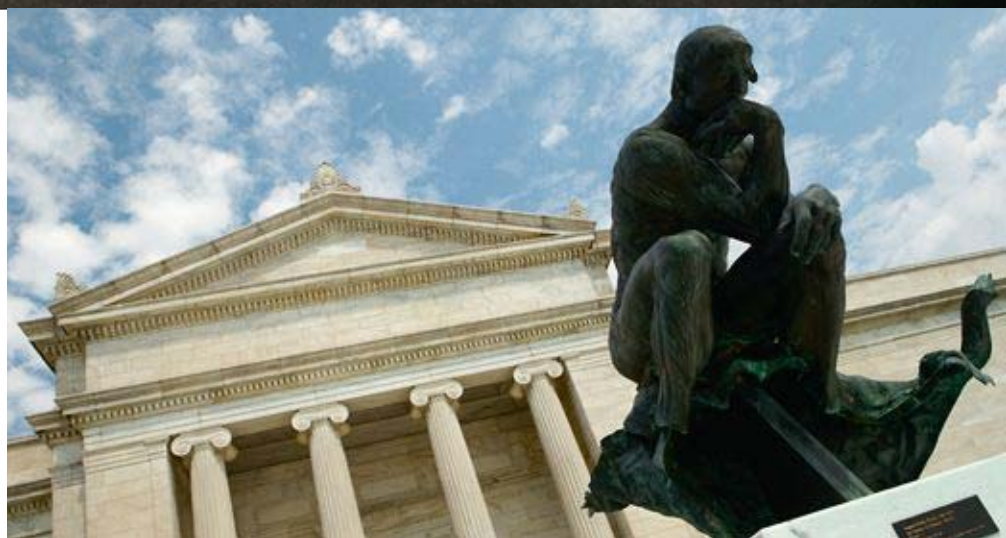
Jeffrey Strean
Director of Design and Architecture
Cleveland Museum of Art
Ohio, USA

Avant-garde

All products used:
pages 22-23

'We have been designing display cases since 1836. We have an obligation to meet very high standards. Roblon's performance meets those standards. We have the same feeling about quality and the same flexible attitude. I am glad we recommended a lighting company that was good for us and good for the client.'

Till Hahn
Managing Director
Glasbau Hahn,
which made the
display cases at the CMA



'Part magic wand, part technological wonder and part work of art, the Salt Lake 2002 torch resembles an icicle plucked from the eaves of a snowbound cabin that is just beginning to melt.'

Carry the Flame
Part magic wand, part technological wonder and part work of art, the Salt Lake 2002 torch resembles an icicle plucked from the eaves of a snowbound cabin that is just beginning to melt. When lit, the Olympic flame burned within a glass crown as a tribute to the spark within each Olympian and a visual metaphor for Light the Fire Within. When the 11,000 individuals nominated and selected for their power to inspire held their torches at the meeting of pewter and silver, with the fiercest pride imaginable, they linked the past to the present and Salt Lake 2002 to other Games. Extraordinary human beings who had changed another, they linked all of humanity in one, golden, unbroken chain.

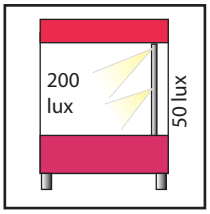
'I wanted the lighting to emphasise the torch's iconic status. At the tip, I used a Classic Downlight that shoots down with the flame, and at the bottom three Classic Downlights which shoot up the torch to highlight its surface. You can really see the carving and the texture.'

David Grill,
who designed lighting
for the Olympic torch at the
Cauldron Park Visitors' Centre,
Rice-Eccles Stadium,
Salt Lake City, Utah

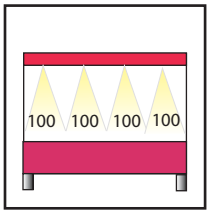
The stadium was the venue
for the opening and closing
ceremonies at the
Salt Lake 2002 Winter Olympic Games

All products used:
pages 22-23

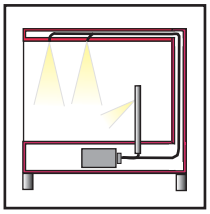
Designing lighting



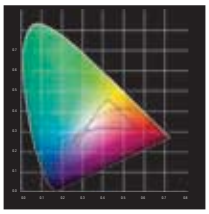
The best lighting effects are usually achieved when the in-case light level is 3-5 times the level of the surrounding ambient light. The optimum lux level depends on ambient light levels and on how daylight affects the room. It also depends greatly on how vulnerable the exhibits are. For older and sensitive artefacts, low levels in the 50-100 lux range are recommended.



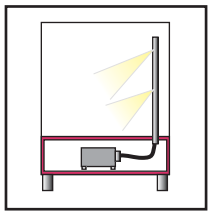
Roblon fibre harnesses give maximum light efficiency. They are randomised for unrivalled uniformity of light, which ensures that lighting is absolutely constant at all points throughout a showcase.



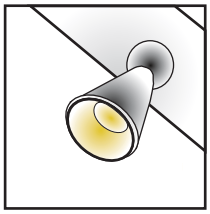
Highly functional fittings which can be tilted, focused and adjusted with millimetre-precision ensure that accent lighting is rigorously precise, bringing out the tiniest, finest individual details of each separate display item. With an integrated Roblon solution, general wash and precision accent lighting can be perfectly balanced in the same case and even run off one single light generator.



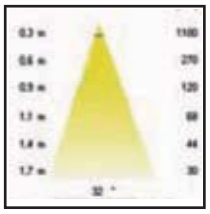
The right colour temperature can always be achieved and precisely fine-tuned by combining Roblon light generators and CTC filters in various ways.



Roblon fittings, fibre harnesses and light generators are combined in one integrated solution. Considerations when designing display case lighting include the best place to hide fibre harnesses and light generators, ventilation requirements for the light generator compartment, and the recommended fibre bending radius.



Fittings can be combined variously in one solution. Adjustable and tiltable fittings give precision light control. Concealed lenses eliminate glare. Fittings can be placed at the most optimal location within the case and light beams can be adjusted with absolute precision, so light and shadow can be minimised and maximised as desired.



The Roblon Lux Calculator is a unique software programme with which you can customise lighting solutions and calculate precise lux values, beam angles and beam diameters in a matter of seconds.

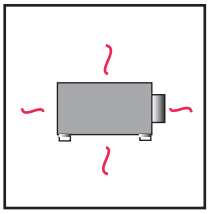
It takes just another few seconds to print your calculations and to save them electronically in files that can be emailed to colleagues and clients, and also imported back into the Lux Calculator any time.

Your calculations can also be saved as IES files that are compatible with other professional light planning and 3D design programmes including DIALux and Visual.

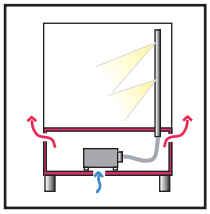
Roblon Lux Calculator

Roblon Lux Calculator is a free programme that can be downloaded from www.roblon.com.

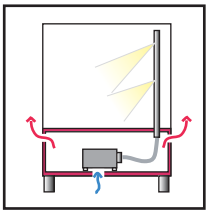
Light generator placement



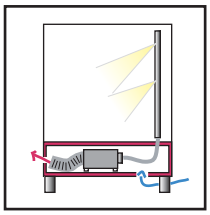
Light generators produce heat. Correct ventilation is therefore very important, particularly for generators in closed compartments.



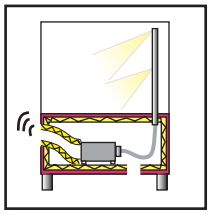
Closed light generator compartments are air-tight, which means there must be enough space to allow natural heat transmission through surfaces. Surfaces should not be insulated. The air volume (m^3) must always be as recommended.



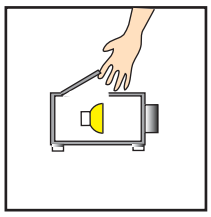
In compartments where the air volume is lower than recommended, the thermal rise of hot air is utilised to remove heat so that it does not recirculate inside. The hot air must be directed towards an outlet, preferably via a flexible tube. Heat is removed via cabinet and air grilles. A fan can be installed if additional ventilation is required.



In exceptionally small compartments, the light generator must always be directly connected to the outside. Air intake and outlet must be separate. Heat is guided out of the compartment through a flexible tube. It can exit via a louvred grille. Particularly in small compartments, air flow conditions should be tested in advance.



There is minimal noise or vibration from a Roblon light generator, and any residual noise or vibration can be further reduced by fitting a sound-absorbing material to the compartment's inner surface or to a plate underneath the generator. Sound insulation conserves heat, so testing is recommended.

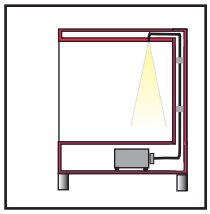


Generators must be easily accessible so that fans and filters can be dusted and lamps changed effortlessly. Electrical expertise is not required to change a lamp or a filter. Air filters must be checked and cleaned regularly. Service manual instructions must always be followed.

'LED has a life time of 30,000 hours but then you have to change every light fitting, which can be compared to replacing the entire installation. As LED is not a fully-developed technology, you can't be sure you will get the same light and colour with replacement fittings. With fibre optics, you only have to change one central bulb in a light generator that's supplying lots of light points. It's simple to change one bulb, and you get the exact same light and colour. And once you've changed the bulb a few times, you've surpassed the life time of LED without having to change the entire installation.'

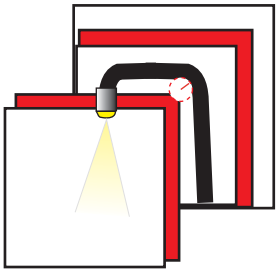
Jesper Kongshaug
Lighting Designer
Copenhagen, Denmark

Fibre harness integration



Roblon fibre harnesses can be run, unseen, through cabinet cavities, through wall, floor or ceiling cavities, and through track casing.

Roblon fibre optic lighting solutions are highly customisable. They can be integrated retrospectively into existing display cases or into new cases during the design phase. They can be seamlessly integrated into display niches and into table-top, free-standing, built-in and wall-mounted display cases, regardless of case size, shape or material.



The bending radius depends on the fibre dimensions and whether PMMA or glass fibre is used. The exact bending radius for any given fibre can be looked up in Roblon's main catalogue, available on www.roblon.com.

Roblon fibre harnesses are subject to the highest quality control. For example, every single Roblon PMMA fibre is individually tested before being released from the factory.

When designing lighting, Roblon recommends the use of a prototype in order to test under realistic conditions.

The integrated solution is delivered ready for installation. Electrical skills are not required for installation or maintenance.

The freedom to design, define and control light

Avant-garde

Cleverly designed to blend completely in with any given surface. Exceptionally well-defined light beams and flexible functionality for fine-tuning light. 360° adjustable. Glare-free lens. Choose wide, medium or focused beams. Ideal for meticulous lighting: create a row of millimetre-perfect light spots or arches; or cast light exactly where you want it on a table, along a wall, through a room, in a display case.

Light Tube

Casts light elegantly downwards in display cases. The slim, discreet design ensures that full focus is on the items displayed. 360° adjustable. Even in the lowest, smallest showcase, it illuminates objects precisely. Choose to illuminate the centre of the case, or highlight several objects individually.

XPO

One lighting system, multiple lighting solutions. Choose discreet light points to create wash lighting. Choose optical heads to highlight specific objects. Or choose to combine both on one conduit. Choose light beam angles, conduit finishes and lengths. Tilt fittings in multiple directions and adjust their focus as often as you want.

Note

Precision light, beautifully wrapped in a simple, subtle design. High light efficiency. Choose between medium, wide, asymmetric and diffuse light. Choose between miniature, medium and large fittings. Ideal in niches and display cases and also for room lighting.

Featured projects

Moesgård Museum
Århus, Denmark
www.moesmus.dk

Photos: Torben Morsø, 2xTorben, Århus
Pages 1, 3, 4, 5, 7

The National Museum of Denmark
Copenhagen, Denmark
www.natmus.dk

Photo: Christina Hauschildt, Copenhagen
Page 8

The Eccles Salt Lake 2002 Olympic Museum
Joe Quinney Winter Sports Center
Utah Olympic Park
Park City, Utah, USA
www.olyparks.com

XPO Conduit (0600 0100)
XPO Optical Head Focus (0600 0350)
XPO Optical Head Medium (0600 0351)
XPO Optical Head Wide (0600 0352)
Ball & Socket Medium (0301 2203)
Crystal Ball 18.5 (0310 1256)
FL 75 US dimmable light generators (0150 0204)
FL 75 E Colour US light generator (0150 0205)
Colour Wheel, Special, FL 75 (5100 0150)

Roblon PMMA Ø3 mm (5200 0551)
Roblon PMMA Ø4.5mm (5200 0552)
Roblon PMMA Ø6 mm (5200 0553)

Lighting distributor: www.visual-lighting.com
Photos: Douglas Barnes, Salt Lake City
Pages 4, 5, 6, 9, 10-13

Hall of Florida Fossils
Florida Museum of Natural History
Florida, USA
www.flmnh.ufl.edu

Florida Museum photo by Tammy Johnson
Page 9

Nova

A skilful series of downlights with a unique dimple feature for sharp tilting. 360° adjustable. Tilts 35° all around, and up to 50° at the dimple point. Pioneering button-system lets you freely adjust and lock the beam tilt and dimple point. Choose large, medium or uniquely small fittings. Choose wide, medium or focused beams. Ideal for illumination on walls, in niches and in display cases.

Bebop

Ingeniously designed to transform swiftly from recessed to raised. When recessed, blends completely in with any given surface. Any time you want, without using tools, pull the optical head out and position it with millimetre-precision. Available with adjustable focused, medium or wide beams and a glare-free lens. Ideal for galleries, museums and retail outlets where displays, designs and moods change.

Framing Spot

Paint a space with light, then frame it. Fix a square or triangle of light on one space: on a sculpture, on advertisements, on a reception desk, on a painting. Available with special lenses for long distance, high intensity and extra tight focus.

FL 150-3

A uniquely compact, very durable and very quiet light generator. High light efficiency. Extremely long lamp life. Very easy lamp exchange. Easy handling. Specially designed for showcase lighting. With a wide voltage range and multiple international certifications, this one generator can be used anywhere in the world.

See the full range of Roblon fittings on www.roblon.com

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XPO Light Points (0600 0200), customised
FL 150-3 B light generators (0161 0000), customised
Roblon PMMA Ø1 mm (5200 0510)
Roblon Glass Ø2 mm (5200 0120)
Roblon Glass Ø3 mm (5200 0130)

Photos: John Rae, New York
Pages 14-17

Cauldron Park Visitors' Centre
Rice-Eccles Stadium
Salt Lake City, Utah, USA
www.stadium.utah.edu

Classic Downlight Ø32 Medium Tiltable fittings (0310 1264)
FL 2001-1 US 42W light generator (0120 0151)
Roblon PMMA Ø4.5 mm (5200 0552)

Lighting distributor: www.visual-lighting.com
Photos: Douglas Barnes, Salt Lake City
Page 18

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Roblon

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